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Front Cover: *A Wood Bison at wallow in Elk Island National Park in the fall*
-Kiva Olson

Back Cover: *Bald Eagle*
- Lowell Strauss

Yellow-headed Blackbird *- Randy McCullough*

Great Horned Owl family *- Randy McCullough*

Blue Jay

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BIRDS

ADVENTURES WITH WHITE-WINGED SCOTERS

C. STUART HOUSTON, *863 University Drive, Saskatoon, SK S7N 0J8*

The White-winged Scoter (*Melanitta fusca*) is a heavy duck, slow to move, with a laboured flight; when the female flushes from her nest, she is the easiest duck to catch by hand. While banding colonial birds on islands in Redberry Lake, a small amount of effort in banding scoters has, through chance, yielded remarkable results. Included are the five oldest White-winged Scoters in the North American banding system.

My first White-winged Scoter nest on 3 July 1946 was a surprise because of its unusual location, almost exactly half mile from the nearest water, York Lake, south of Yorkton, Saskatchewan; it contained 10 eggs.[1] My next nest encounter was during a gull-banding expedition to an island at the north end of Last Mountain Lake, 28 June 1955, accompanied by Margaret Belcher and her father, S.R. Belcher. Here on a one-acre island we flushed eight females from their nests amid nettles. The first two had such a slow, laborious takeoff that we realized we should try to pounce upon any others before they got free of the nettles. The next five females, flushed from nests with 14, 13, 12, 12, and 12 eggs, were caught and banded, as was a sixth female from a larger island nearby.[2] The following year, 1956, returning to the same island, we caught four new scoters and recaptured two of the six we had banded the year before. My first gull-banding visits to islands in Redberry Lake capitalized on our new technique; we captured four adult female scoters on their nests 11 July 1956 and another 12, with recapture of one female from the year before, on 30 June 1958.

My move to Saskatoon in 1960 allowed us to keep re-capturing scoters during colonial bird banding visits to Redberry Lake, 1960-1983. This led to an appreciation of the delayed life cycle of this heavy scoter, which only rarely begins breeding before three years of age,[3] although at Redberry Lake through 1985 the youngest breeding was at five years of age at recapture (technically 4.9 years of age). Fortunately this longevity "appears to offset the low productivity"[3] of never more than 0.5 ducklings produced per pair at Redberry Lake, due to gull predation on newly hatched young.[4]

Agile helpers were a benefit. Joe Schmidt, when 16 or 17, flushed a female scoter from her nest that gained altitude more quickly than some. I called out: "Tough luck!" but Joe leaped higher than I had thought possible and caught that scoter with his outstretched left hand. As his foot landed beside another scoter nest, that bird flushed; Joe plucked the second bird from the air with his right

hand. Two scoters caught within one or two seconds! I banded both. Never was a scoter clutch crushed underfoot and never was a scoter injured by being caught.

In helping an American grad student, I did myself and science a favour. Pat Brown, more than halfway through his first summer of a Master's program focused on the biology of White-winged Scoters, telephoned me from Alberta on 14 July 1975. He had little to show for his first months of study at Miquelon and Jessie lakes in Alberta. A wildlife biologist he met on a lakeshore there had advised him to contact me. Pat asked whether I could teach him how to catch adult scoters on their nests. Gladly. I suggested we meet him and his summer assistant, Chuck Harris, at the shore of Redberry Lake at 4.30 a.m. on 16 July.

Do you mean 4:00 in the afternoon? Pat asked. No, I should be at work at the hospital at 8:00 a.m. and we launch the canoe at a beach more than an hour's drive from Saskatoon. My conscripted helpers on this urgent response were my son Don and his friend Ray Bisha, both going into grade 11. Within an hour that morning we caught seven adult female scoters; four were new and three others already carried one of my bands from earlier years.

Pat and his wife, Mary Ann, studied scoters intensively at Redberry Lake for six summers. Iowa State University at Ames presented his M.Sc. in 1977 and his landmark dissertation earned him his Ph.D. from the University of Missouri – Columbia in 1981. This pre-eminence earned Pat first authorship of the White-winged Scoter for the *Birds of North America* series in 1997. His co-author was his supervisor for both degrees, renowned waterfowl biologist Leigh H. Frederickson. During six summers, Pat had captures of Houston-banded scoters on 61 occasions.

Good fortune continued. Pat Kehoe, a student of Tom Nudds at the University of Guelph, chose Redberry Lake for his two-summer Master's study in 1984 and 1985. Kehoe recaptured another 19 Houston-banded scoters while I only re-caught only 13 myself, in the summers when Brown and Kehoe were absent. At Redberry Lake, 50 of the 83 post-1959 Houston-banded female scoters were re-caught on 93 occasions. One was 16 years after initial banding and hence was least 18 years old, the continent age record to the present; statistical probability suggests it was more likely at least 21 years old. The second oldest recapture was at 13 years, when at least 15 years, but probably 18 years of age; this scoter had been re-caught at 3, 5, 8, 10, 12 and 13 years after its initial capture on its nest.

Bird banders sometimes jokingly remark that "every bird needs a band." Thanks to the unanticipated arrival of Pat Brown and Pat Kehoe, we have an accurate insight into White-winged Scoter longevity from relatively easy but seemingly random recaptures.

Acknowledgments
I thank Pat Brown, Pat Kehoe and the 56 different people who accompanied me on 26 occasions. Since we left the city at 3 or 4 am, to canoe across to each island in turn and leave the lake before the sun got hot enough to harm featherless young cormorants and pelicans, only Arnold Nijssen came four times; nine others helped twice. The other 46 chose not to repeat the experience.

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White-winged Scoter *-Len Blumin*

COMPARING SOUTH AFRICAN AND CANADIAN PRACTICES FOR MANAGING LARGE HERBIVORES IN FENCED PROTECTED AREAS

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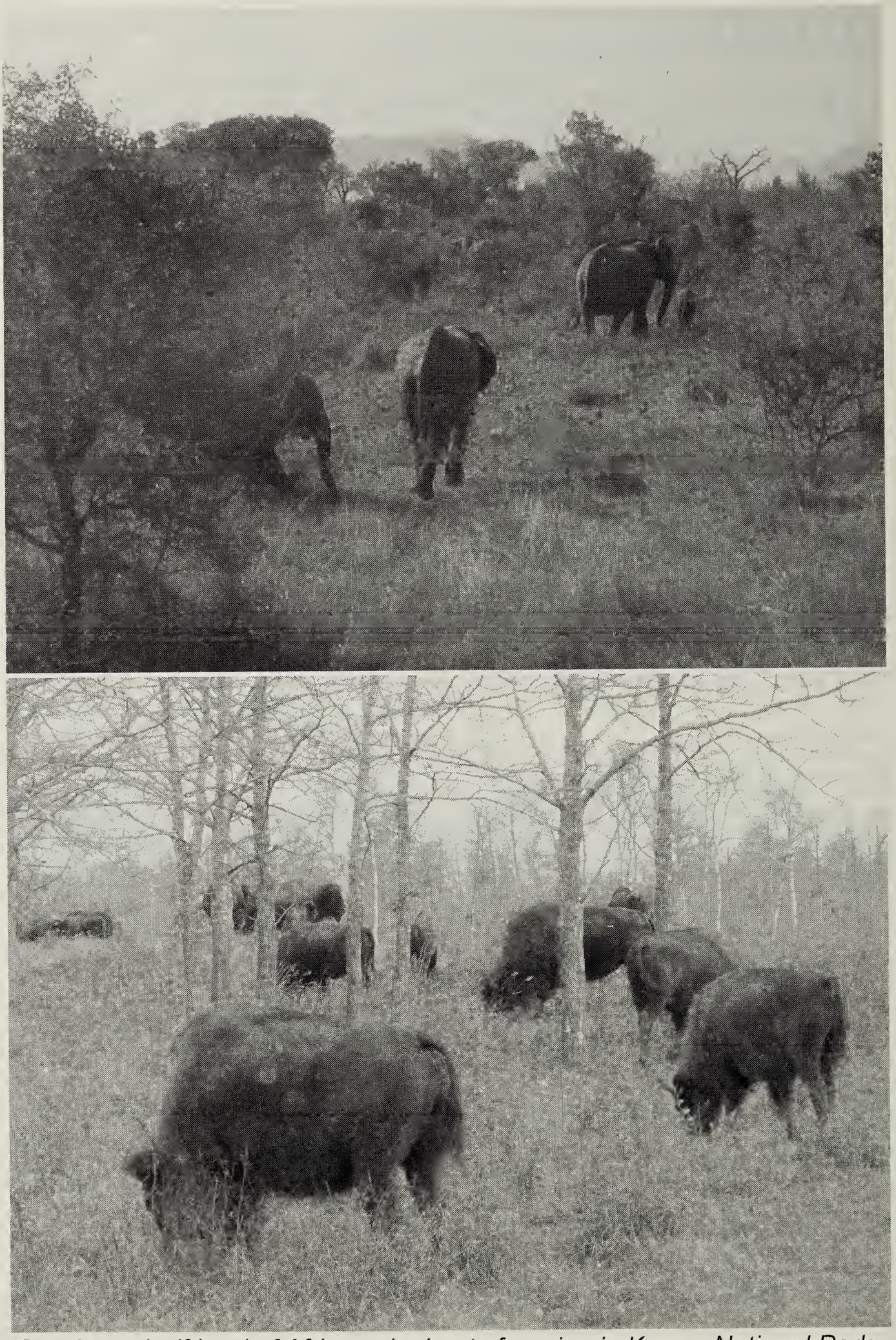
As human civilization expands and depletes resources, protected areas, such as national parks, have become key areas of conservation. Increasingly, protected areas are becoming 'islands' of wilderness.[1,2,3] As a result, wildlife cannot move freely throughout their ranges, concentrating their impacts.[20] Large herbivores greatly impact vegetation in areas they occupy;[1,3,4,5,6] such impacts are compounded in fenced protected areas,[1] especially if predation is reduced or absent and if populations become hyperabundant.[7] Therefore, wildlife managers must take a more active role. Kruger National Park (KNP) in South Africa and Elk Island National Park (EINP) in Canada are both fenced parks with large numbers of the largest herbivore species on their respective continents. KNP has the African elephant *Loxodonta africana*, listed as vulnerable,[8] while EINP has the bison *Bison bison*. EINP has two subspecies of bison, wood bison *B. b. athabascae* and plains bison *B. b. bison*,[9] both of which have threatened status in Canada.[10] When too large or too small, the populations of these species could negatively impact overall biodiversity as it connects to ecosystem health and sustainability. There is limited literature on the management of highly abundant large herbivores in fenced protected areas on sites beyond Africa, and on comparisons between practices in Africa and North America. KNP and EINP offer an opportunity for comparison because of their similar management objectives, fencing policies, and issues with high profile populations of large herbivores that have large impacts on ecosystems. Although the parks are unique in some respects (i.e., different ecosystems, continents, and amounts of visitation), the fundamental aspects of wildlife management for large herbivores can be applied to other parks and countries. The purpose of this article is to compare past and present management strategies in KNP and EINP and the methods they employ with a goal of generating insights for improved management strategies.

Study Areas

KNP and EINP share common goals and histories (Table 1) and have some of the highest ungulate densities in the world.[11,12] Elephants and bison



Top: A cow/calf herd of African elephants foraging in Kruger National Park.
Bottom: Plains bison herd grazing in Elk Island National Park -Kiva Olson

share some similar characteristics in regard to their impacts on ecosystems and they are both keystone species (Table 2). Nevertheless, the parks have different sizes and densities of their largest herbivores (Table 1). We recognize that it is difficult to select two parks with enough similar characteristics to allow for fair comparisons of their management strategies; we chose these parks because they are home to their continent's largest herbivores, the parks are fenced, and we have some familiarity with them.

Depending on definitions used, these two species might be overabundant in their respective parks. Following Parks Canada's policy, a hyperabundant wildlife population meets one of the following conditions: 1) exceeds the upper range of natural variability and impacts ecological integrity, 2) has resulted from alteration of natural mechanisms for population regulation, 3) there is a risk of negatively affecting native species at risk, and 4) the population has caused impacts beyond the historical range of variation.[14] By this definition, bison in EINP are hyperabundant. Parks Canada is required to manage hyperabundant populations to maintain or restore ecological integrity. Methods to manage hyperabundant populations should best contribute to restoring or maintaining ecological integrity, mimic natural processes, and have been found to be effective on similar species. KNP also adheres to these standards and, though the term hyperabundant is not used in South African legislation, their National Norms and Standards for the Management of Elephants in South Africa[15] does outline the impacts elephants can have and what measures can be taken when management plan objectives are not met due to population size or distribution. KNP's elephant population is recorded to have impacts on vegetation and, therefore, other species[12] thereby hindering KNP's biodiversity management objective.[16] Therefore, given the impacts of the elephant population in KNP coupled with Parks Canada's definition and the information from the Norms and Standards[15], both populations can be defined as hyperabundant.

The main methods employed to deal with abundant populations of large herbivores are translocation, contraception, culling, and non-management.[1,3,13] Another less common method is distribution control. Non-management is not an option for elephants in KNP because their population is too large and is not an option for EINP because of its small land area and lack of predators. The remaining methods will be discussed in relation to the management of elephants in KNP and bison in EINP and how they are employed from different strategic points of view (i.e. impact control for KNP versus numbers control for EINP). When developing and implementing a wildlife management plan, park managers need to consider the advantages and disadvantages of each of these methods, as well as the behaviour of the species on which they are being applied.

Table 1. General characteristics of Kruger National Park, South Africa and Elk Island National Parks, Canada.[11,12,16,20]

	Kruger	Elk Island
Established	1899 – Sabie Game Reserve 1926 – national park	1906 – wildlife sanctuary 1913 – national park
Largest Herbivore Present	African elephant *Loxodonta africana*	Bison *Bison bison*
Year Boundary Fence Completed	1975	1906
Size	20 000 km^2	194 km^2
Population Size of Largest Herbivore	2007: ~ 13 000 2012: ~16 700 Goal: 6 000-8 000[a]	2007: ~600 2011: ~1 065 Goal: 420[b]
Density	0.65/ km^2	3.09/km^2
Management Objective	maintain biodiversity	maintain biodiversity
Fire Management Plan	yes	yes
Water Management Plan	yes	no

[a]Target population size during culls from 1967-1994. No exact population goal since 1994. Population goal given to provide context.
[b]Goal proposed in 2009.

Analysis of Management Methods

First, translocation is a non-lethal method of removing part of a population from a protected area while maintaining the species' genetic pool and re-establishing or increasing population numbers in a new area. Translocation can be difficult because it is expensive, requires a large and skilled team, is time-consuming, and can be difficult to find suitable and accessible translocation sites.[13,17] Elephants and bison are both large animals that require special handling and equipment to ensure the safety of animals and humans. Unlike bison,

Top: A mother and calf bison move past a fence line in Elk Island National Park.
Bottom: An African elephant mother with a very young calf. *-Kiva Olson*

entire family units of elephants must be moved because of their strong family bonds.[3,18] KNP started translocating elephants in 1978, mainly orphaned juveniles.[12,17] This process led to the development of delinquent juveniles (ie. without the mentoring of adults) until translocations involving entire cow/calf herds and adult males was possible.

Translocation operations occur in cooler weather (Table 2), the animals are kept standing during transport, and arrive at new site in the daylight to reduce stress and injury.[17,18,19] Currently, there are few translocation areas available in Africa for elephants, because most areas have populations already, are not accessible, or are in politically unstable countries. However, KNP has effectively increased its size by opening up its fenced borders to neighboring game reserves, which then become contract national parks, and to the Mozambique's Limpopo National Park to form the Great Limpopo Transfrontier Park and Conservation Area.[16] Consistent management will require considerable inter-jurisdictional cooperation. EINP is a major source herd for bison re-introduction programs in North America and Europe because of the genetic purity and disease free status of the bison.[20]

Second, contraception involves preventing the union of sperm and egg during sexual activity. The advantages are that no animals are killed, and it can be non-invasive and reversible.[3, 21] The disadvantages are the high expense, need to locate animals for follow-up treatments, time delay on population decline for long-lived species, changes to the demographic age proportions, and possible behavioural changes.[3,21] There are three main types of contraception,[21] the first of which is hormone control. This method can cause female elephants to enter false

Table 2. Comparison of main characteristics of the African elephant *Loxodonta africana* and bison *Bison bison* important for management of these species.[4,5,17,19,35,36]

	Elephants	Bison
Herd Membership	family led by matriarch	flexible led by older cow
Herd Size	9-12 individuals	9-12 individuals
Lifespan	up to 60 years	up to 15 years
Migration	when range available	when range available
Feeding Strategy	mixed grazing and browsing	grazing
Vegetation Impact	open up wooded areas	open up wooded areas
Main Predator	humans	humans and wolves
Best Time to Handle and Transport	dry season (cooler weather)	winter (cooler weather)

estrus resulting in males harassing them and separating them from their calves.[2, 3] A KNP assessment of this method was cut short due to calf deaths.[12] Second, sterilization is difficult due to the size of elephants. Laparoscopic vasectomy surgeries on dominant males is the best option as it can be performed in the bush and preserves mating competition by maintaining sex drive.[22] Third, immunocontraception can be delivered remotely, causes no behavioural changes, and is reversible with time.[21] There are two types: porcine zona pellucid (pZP) and anti-gonadotropin-releasing hormone (anit-GnRH). The former produces an immune response causing antibodies to form around maturing follicles, whereas the latter hinders the release of follicle-stimulating hormones and leutinizing hormones resulting in interference with progesterone and testosterone production.[23] The anti-GnRH vaccine does impact hormone driven behaviour which would affect the social dynamics in elephant populations.[24] The pZP vaccine has been used effectively on elephants and holds the most promise; anti-GnRH has not been fully tested. KNP had the first field testing of pZP on elephants in 1996 and it was effective,[24,25] but the long-term effects on herd dynamics are unknown.[3,12,26] Contraception is not a viable option on a large scale for KNP's elephants due to population size. The use of contraceptives for population control in bison is relatively new, and there is little research on its effectiveness. Any work done has dealt with deterring disease transfer. While contraception has not been used in EINP, it has been used for wild horses (*Equus ferus*) and white-tailed deer (*Odocoileus virginianus*) in North America.[27]

Third, culling is an effective but controversial method. It quickly reduces large populations, effectively controls disease, and can result in revenue from product sales.[1,3,13] However, culling causes a loss to the genetic pool, appears counterproductive when the broader population in question is listed as vulnerable or threatened[6,13] and can result in disturbing natural fluctuations in population numbers.[28] The most humane way to kill an elephant is with a brain shot, but this requires a skilled shooter due to the skull and muscle structure of the head.[12,13] Entire family units must be culled because of strong family bonds.[3,13,15] KNP culled elephants from 1967-1994,[12,29,30] but stopped after receiving pressure from international and animal welfare groups.[12] Bison can be shot in the field or sent to an abattoir.[20] Selection for bison culling is determined by desired percentages of age groups.[31] EINP has used culling since 1929 to control the bison population.[32] Meat from both elephant and bison culls have been sold or donated to surrounding communities.[13,20]

Discussion and Management Implications

KNP and EINP originally used a similar strategic approach of focussing on population size when applying population control methods, but KNP has now proposed to use

Top: The trailers used to move African elephants during relocation.
Bottom: The inside of an elephant trailer that has two compartments

-Kiva Olson

a strategy of controlling impacts instead. This strategy proposed by KNP is striving to deal with the root cause of a large elephant population by managing the landscape which the animals use instead of just the effects. All of KNP's proposed plans include zoning with areas of high and low elephant impacts.[12,29,30] The zones are maintained by contraception and culling along with controlling the distribution, availability, and accessibility of key resources such as water and vegetation. An active adaptive approach backed by research is needed for this to succeed. The opening up of the boarders of KNP to combine its land area with private game reserves and Mozambique's Limpopo National Park does help to spread out the elephant population but does not necessarily address the issue of hyperabundancy. The new area may still not be large enough to sustain a large elephant population and maintain biodiversity. Elephants move to where they can acquire food and water.[28] Thus, to manage impacts rather than specific population numbers it has been suggested to use fire and water management to guide elephants into the proposed zoned areas for high and low impacts. However, in KNP, cow/calf herd distribution is related to rivers more than artificial watering holes, whereas bulls appear to prefer artificial watering holes.[33] These distribution trends make it more complicated to control distribution. There are also the effects on other species to consider. The impacts of controlled burns on elephant habitat use are still in their infancy. It can be inferred from vegetation preferences that a freshly burned section would deter elephants because they prefer vegetation that is diverse and complex.[28] However, this strategy requires an understanding of the impacts of abiotic and biotic factors on the distribution of large herbivores[34] and how they can be used to mimic natural distribution patterns.

EINP has used the methods of culling and translocation, with variation in implementation. Currently, EINP uses a 'fast-tracking' method of translocation where only those bison leaving the park are processed in corrals.[20] Historically, with fairly high accuracy of bison numbers, almost all bison in the park were processed every 1-2 years.[32] EINP can benefit from integrating KNP's proposed impact management into their bison management strategy which could result in a better mimicry of natural processes. There is no water management plan in EINP like there is in KNP because of the different ecosystem. However, EINP has a fire and vegetation management plan that could be incorporated into the bison management plan. Bison have been found to prefer newly burned areas because of the high quality food, even in wooded areas.[34] Bison will naturally move into more freshly burned areas thereby decreasing their impacts on other areas. The integration of fire management into the bison management plan would assist EINP in forming a management strategy based on impact control rather than specific population numbers. Since

EINP's management plan currently consists of what KNP has done in the past, there are no fundamental management ideas from EINP that can be integrated into KNP's current elephant management strategies. What KNP needs now is an approved management plan for their elephant population so that they can continue to support their rich biodiversity.

The choice of strategies to manage populations of large herbivores is deeply impacted by public opinions (i.e. social views on culling of elephants have delayed approval of KNP's elephant management plan, even though culling occurs for buffalo and other ungulates). To increase public acceptance, parks staff must provide the public with a rationale for using any strategies for managing large herbivore populations. In addition, animal populations are subject to fluctuations and chance events that can drastically alter population sizes. KNP's proposed elephant management plan appears to be trying to accommodate for these natural changes in elephant populations and use natural distribution factors, while still maintaining biodiversity.

With parks around the world increasingly becoming 'islands' of wilderness, management plans should start addressing impacts relating to population sizes of species since non-management approaches will no longer be effective. A comparison of large herbivore management strategies at KNP and EINP demonstrates how distant parks can learn from each other about ways of managing similar wildlife issues using the same methods but with different strategies guiding the implementation. As well it serves as a case study highlighting the impacts of large herbivores with abundant populations that is relevant to herbivore species of any body size. Such comparisons, resulting from a careful examination of underlying principles and practices, can be beneficial for other parks around the world in developing innovative wildlife management strategies, sometimes using methods they already employ.

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Plains bison herd grazing in Elk Island National Park. *-Kiva Olson*

SPECIMENS OF NORTH AMERICAN WATER SHREW FROM DELTA MARSH, MANITOBA

SPENCER G. SEALY, *Department of Biological Sciences, University of Manitoba, Winnipeg, MB R3T2N2*

The range of the North American water shrew (*Sorex palustris*) in Manitoba extends from the northern tree-line south to include outliers of the boreal forest in the aspen-oak transition zone.[1,2,3] Populations of this shrew persist on the Porcupine, Duck, and Riding mountains, and in the Carberry Sandhills.[4,5,6,7] North American water shrew also has been recorded at Delta Marsh, based on one specimen collected in the 1940s. I report three additional specimens found dead at Delta Marsh.

Previous specimen of water shrew from Delta Marsh

One specimen of North American water shrew (hereafter, water shrew), collected along the northern edge of Delta Marsh (5011′N, 98°19′W), Manitoba, was reported in the literature.[8,9] Tamsitt noted (p. 73) that J. Dewey Soper "obtained a young adult male from the shore of the Delta Research Station pond"[8], which had been collected by William H. Elder.[9]

The vertebrate collection of the Delta Waterfowl and Wetlands Research Station was transferred several years ago to The Manitoba Museum (TMM, formerly Manitoba Museum of Man and Nature) in Winnipeg, but no specimen of the water shrew was among those transferred, and none was entered into the catalogue (J. Klapecki, pers. comm.). Soper collected mammals in Manitoba intermittently from 1927 to 1948 and deposited them in the collections of the Canadian Museum of Nature, Ottawa, Ontario, and Department of Biological Sciences (then Department of Zoology) at the University of Alberta, Edmonton.[10] In January 2002, I examined a specimen of a water shrew taken at Delta Marsh that was catalogued at the University of Alberta, Museum of Zoology (UAMZ 1407). Soper's personal label attached to the specimen included his personal collection number, #4580, and confirmed the shrew as a young male. Another label indicated the original collector, W.H. Elder. The specimen was taken on 7 August 1941, not 1947, as Hochbaum had reported.[9] Only the skin was located but measurements were taken before the specimen was prepared: total length = 142 mm; tail vertebrae = 61 mm; and hind foot = 19 mm. Soper either received the specimen directly from Elder or it was among other specimens transferred from the Delta Waterfowl Station to the University of Alberta. Moore included the water shrew, based on Elder's specimen, in a list of mammals from Delta Marsh that was prepared for the annual meeting of the American Society of Mammalogists[11], held in Winnipeg in 1965. No water shrews were collected in various habitats in and around Delta Marsh during intensive trapping by Tamsitt in 1958[8] or by Robert E. Wrigley and co-workers during the 1970s.[2]

Recent specimens of water shrew from Delta Marsh

Students and I studied the behavioural ecology of songbirds, and parasitism by the Brown-headed Cowbird (*Molothrus*

ater), between 1974 and 2010, mostly along the narrow forested dune ridge that separates Delta Marsh and Lake Manitoba (50°11'N, 98°19'W)[12], but also at various sites in and around Delta Marsh. During these years, it was not unusual to find dead shrews on the road that extended the length of the forested ridge along which we worked (Fig. 1). Of the shrews identified, masked shrew (*Sorex cinereus*), arctic shrew (*S. arcticus*), and northern short-tailed shrew (*Blarina brevicauda*) were most frequently recorded. These shrews had been killed by a mammalian predator, as evidenced by tooth marks in most cases, and apparently were discarded (Sealy, unpublished data). In 2001, two water shrews (Fig. 2) were among the shrews found dead that year on the ridge road at Delta Marsh, both killed by mammals, and also apparently discarded, in both cases less than 2 m from the moist edge of the marsh. I weighed, measured, and prepared both shrews as specimens (skin and skull) and deposited them in the mammal collection of The Manitoba Museum.

The first specimen, a lactating female (TMM 24040), was found by Rebecca R.M. Stewart on 6 June 2001. It weighed 19.1 g, was moderately fat, and bore six placental scars (2 scars on the left horn and 4 on the right). This number is within the range of five to eight embryos normally produced by water shrews.[13] Two puncture wounds, presumably tooth marks, were visible at the base of the skull, and the rib cage

Figure 1. Road along south edge of the dune-ridge forest, Delta Marsh, similar to that on which the dead American water shrews were found. To the right of the road, the dune ridge supports predominantly Manitoba maple (Acer negundo), *green ash* (Fraxinus pennsylvanica), *and peach-leaved willow* (Salix amygdaloides). *To the left of the road, along the edge of the marsh, are predominantly sedges (*Carex *spp.) and sandbar willow* (S. interior).

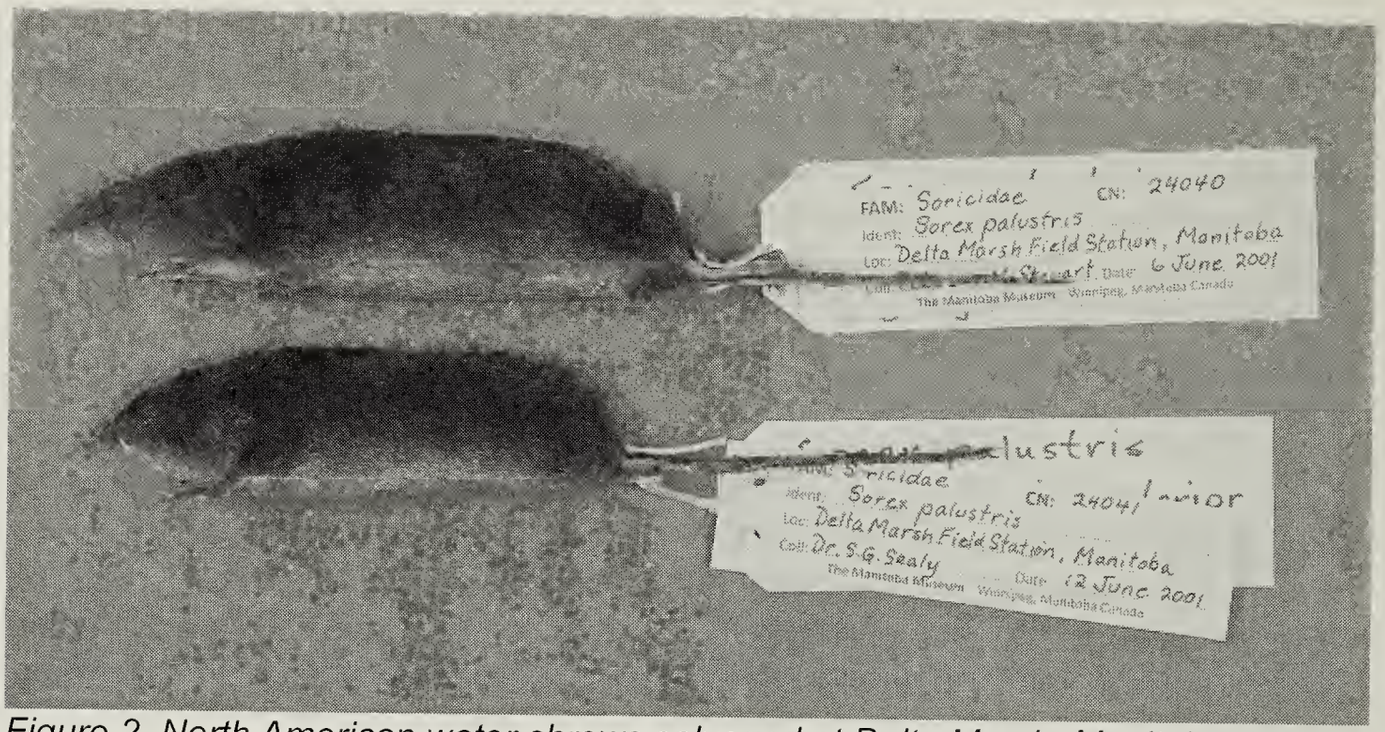

Figure 2. North American water shrews salvaged at Delta Marsh, Manitoba: top, adult female (TMM 24040); bottom, juvenile female (TMM 24041).

was punctured. The second specimen was salvaged on the road at the edge of the marsh about 1 km west of the first, on 12 June 2001. This specimen was a juvenile female (TMM 24041) that weighed 8.4 g and exhibited little fat. Its cranium had been crushed, apparently by the bite of a mammal. The mass of these specimens fell within the ranges for breeding female and juvenile water shrews, respectively.[13]

On 19 June 2005, I found a third water shrew at Delta Marsh on a lawn near a cottage in the middle of the dune-ridge forest, about 30 m from the nearest water. Its tail was curiously knotted with the tails of two deer mice (*Peromyscus maniculatus*). The specimens, which had been stored in a freezer, were destroyed during a power outage caused by a fire in late March 2009. Only the mammals' identities were determined and I had not examined the knots closely enough to identify a substance that might have "glued" the tails together, or to determine whether this was, albeit doubtfully, a hoax. Knotted tails have been reported previously, in rodents[14,15], but apparently not in shrews. An instance of knotted tails in four young eastern fox squirrels (*Sciurus niger*) was reported in Weyburn, Saskatchewan, in 2003.[15] Hoium speculated that the knots resulted from close contact among the squirrels in their nest: the tails may have become covered with sap or loose stools that dried, sticking them together, and later became entangled.[15]

The circumstance that brought a water shrew and two deer mice of unknown age together, closely enough for their tail's to become entangled, is not known. It seems unlikely, however, that these individuals ended up in a nest together, as water shrews and deer mice kept in captivity avoid each other.[16] We will never know for sure how their tails become knotted.

Acknowledgements

Jack Dubois and Janis Klapecki permitted me to examine and borrow specimens of water shrews under their care in The Manitoba Museum. More

recently, Klapecki catalogued two of the specimens reported in this paper and facilitated photography. Michel Gosselin searched the collection of the Canadian Museum of Nature for specimens of water shrews from Delta Marsh and Wayne E. Roberts allowed me to examine specimens in the collection of the Department of Biology at the University of Alberta. I thank Rebecca R.M. Stewart for salvaging one of the shrew specimens and an anonymous reviewer for comments on the manuscript. Our long-term research on the behavioural ecology of birds at Delta Marsh was funded chiefly by the Natural Sciences and Engineering Research Council of Canada.

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PHOTO ESSAY

FIRST RECORD OF NESTING BALD EAGLES AT LAST MOUNTAIN LAKE NATIONAL WILDLIFE AREA

Text: PHILIP S TAYLOR[1], ROSS DICKSON[2], LOIS VANTHUYNE[2]
Photos: CATHERINE DENNY[2], KATHERINE CHABOT[2]
[1] *Saskatoon SK, tel. (306) 665-6371*
[2] *Box 280 Simpson, SK S0G 4M0*

In the summer of 2012, a pair of Bald Eagles (*Haliaeetus leucocephalus*) attempted to nest high in a mature cottonwood tree within the Last Mountain Lake National Wildlife Area and Migratory Bird Sanctuary (LML NWA/MBS). The Bald Eagle pair had sub-adult plumage but appeared to be incubating for more than a month. This was the first known nesting attempt within the LML NWA. The pair was first noticed while PT was showing RD his new spotting scope at the Last Mountain Bird Observatory.

On 15 May 2013, Renny Grilz observed a pair of adult Bald Eagles from a distance (800m). They appeared to be nesting in the same location as in 2012. On 27 June 2013, nesting was confirmed and at least 2 chicks were seen by Renny Grilz, Scott Campbell and LV (Canadian Wildlife Service). Unfortunately, the photos on this date were taken with a camera phone and are thus blurry. The photos in this essay were taken on July 3, 2013.

The nest location is close to a colonial bird nesting island where they were seen occasionally, possibly scavenging. The colony includes Double-crested Cormorants, American White Pelicans, and Ring-billed Gulls. Other potential scavengings and prey in the area include Common Carp, Muskrats, crippled Snow Geese and dead deer.

Bald Eagle is a large raptor that nests across Canada along coasts, rivers, and large lakes.[1] Currently, nesting records are common from lakes and rivers in boreal Saskatchewan, but very uncommon in the prairie ecozone.[2] Previous records show one successful nest in Southern Saskatchewan near Estuary in 2005.[3]

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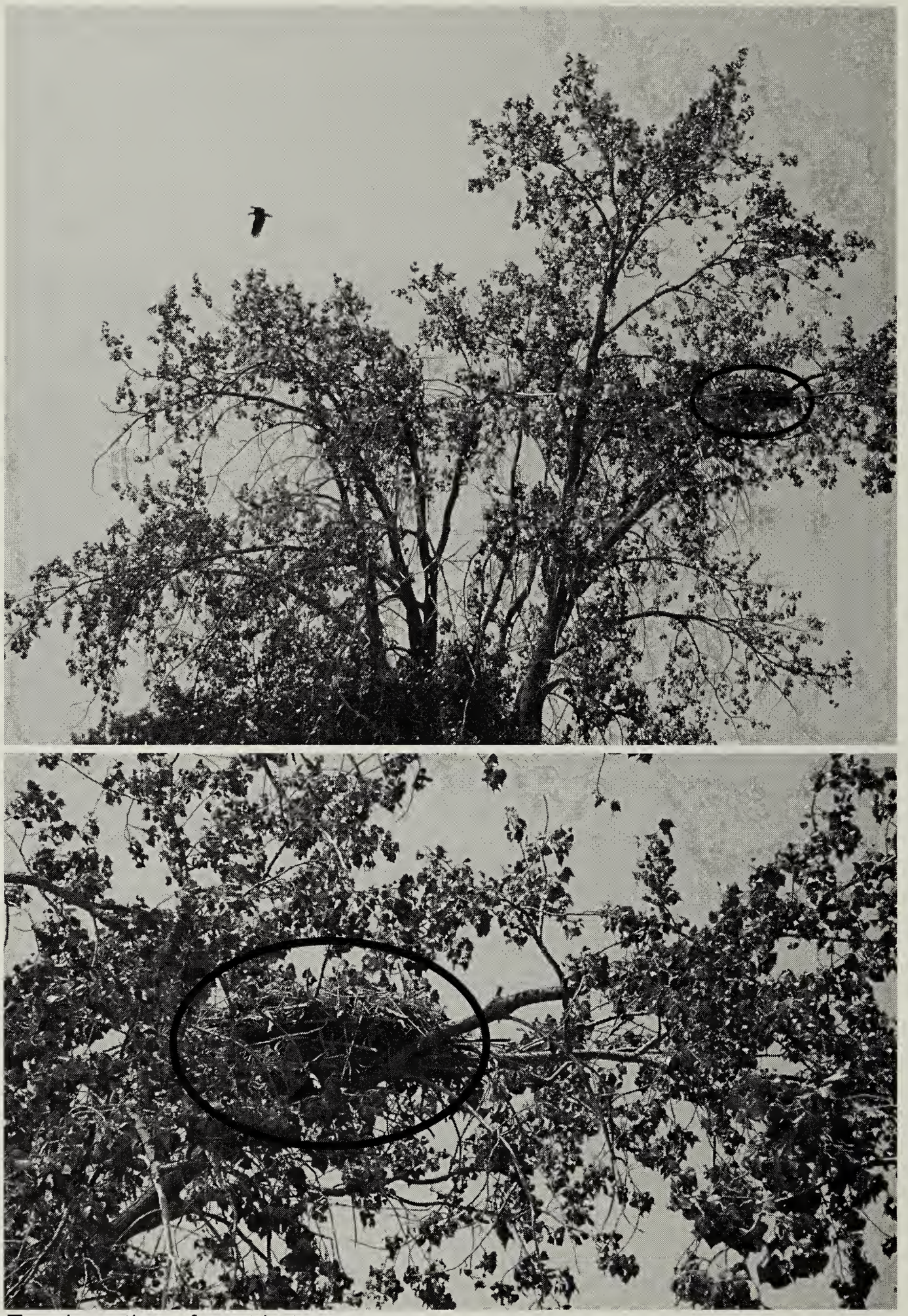
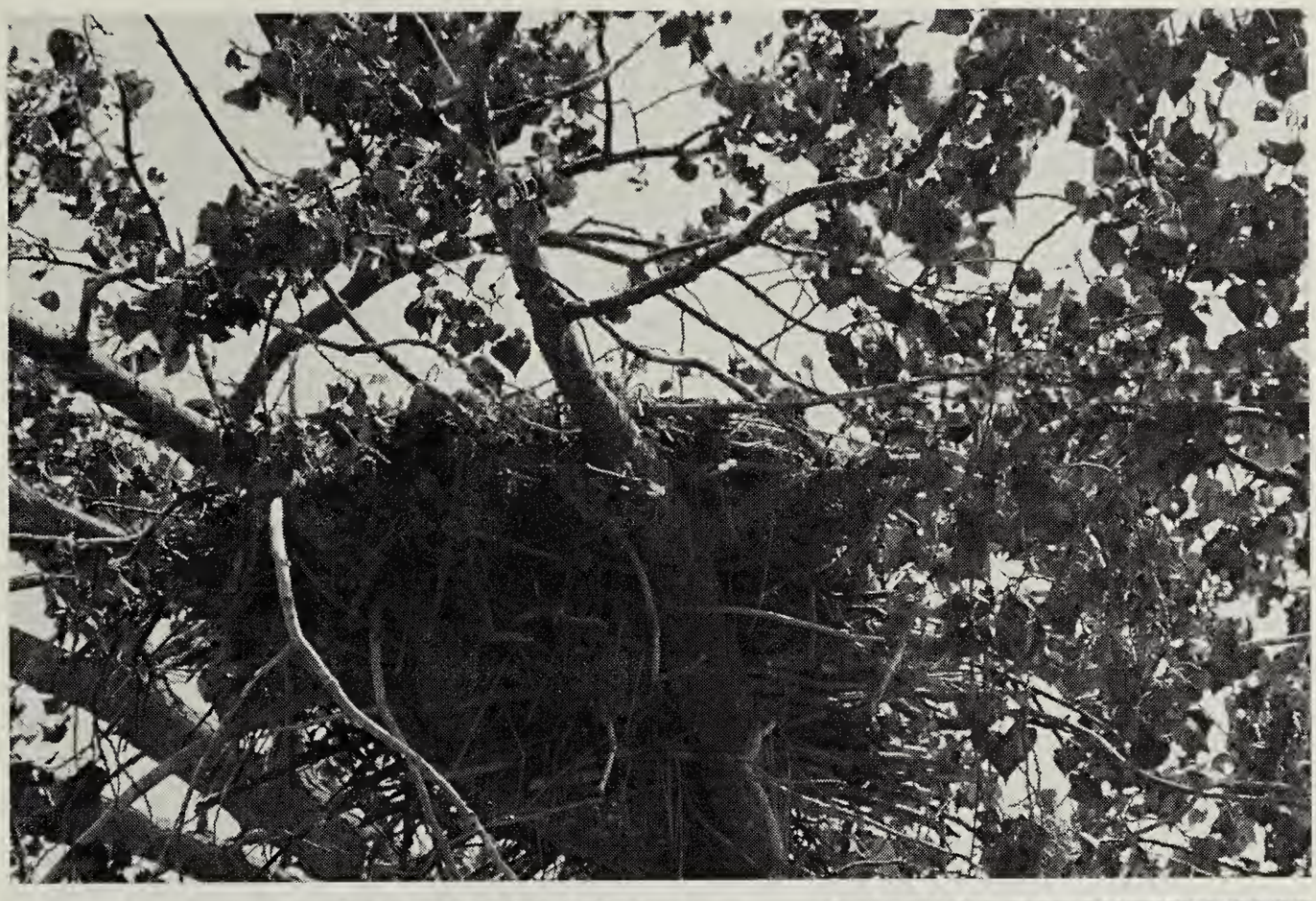
An eaglet in the nest.



Top: Location of nest in tree.
Bottom: Closer view of eagle nest.



Top: Close-up of eagle nest.
Bottom: Adult eagle leaving nest.

Adult eagle preparing to land. *-Lowell Strauss*

Last Mountain Lake adjacent to eagle nest.

NOTES and LETTERS

ROBINS ATTEMPT TO NEST IN ARTIFICIAL DAISIES IN REGINA

ROB WARNOCK
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During the week of 7 May 2013, American Robins (*Turdus migratorius)* were seen by me and my folks depositing nesting material in a hanging basket of artificial pink daisies on our deck in south Regina. It is the first time birds tried to set up a nest in a hanging basket in our yard. We are a bit perplexed as to why robins would choose that hanging basket as a nest site when there are much better natural nest sites nearby. It is possible that inexperienced birds chose that hanging basket. My mother initially chose to take away that hanging basket and remove the nest material before any eggs were laid. After two weeks, I hung the hanging basket of artificial daisies on the deck once again. In no time at all, the robin was back putting nesting material in the same basket. This time, we anchored an aluminum pop can in the centre of the hanging basket. So far, the pop can has stayed in place and has discouraged the robins from using the hanging basket as a nest site. The nest would have certainly failed as the hanging basket sways violently in strong west and northwest winds on our exposed deck.

According to the Cornell Laboratory of Ornithology (CLO), robins and other songbirds have chosen artificial flowers and wreaths as nest sites in other locations in North America. Structures around houses like eavestroughs and outdoor lights have been used as robin nest sites as well. I recommend CLO's Funky Nest webpage (*http://celebrateurbanbirds.org/community/challenges/funky-nests-2013/results/*) for other examples of strange and unusual nest sites in North America.

American Robins attempted to nest in this hanging basket of artificial pink daisies.
- Jerry Bagu

GREAT HORNED OWL REMOVES PURPLE MARTIN FROM BIRDHOUSE

KERRY HECKER, LOWELL STRAUSS Email: *kerry.hecker@gmail.com*

On 18 May 2013 at 21:25 h, just at dusk (sunset was at 20:50 h), we saw our resident Great Horned Owl (*Bubo virginianus*) clinging with its talons to the side of the Purple Martin (*Progne subis*) house, flapping to keep its balance. It then flew down to the ground,10m away. Two or three minutes later we observed it (with binoculars) flying away with something black in its talons. The thing in its talons was the right size and shape to be a Purple Martin. We've never seen active predation by anything at the Purple Martin house before! We would be interested to know if anyone else has seen something like this occur.

Top: Great Horned Owl lurking in the shadows of a nearby tree.
Bottom: Purple Martin at birdhouse. *-Lowell Strauss*

SERIES: LEARN YOUR LICHENS

BERNARD DE VRIES

Ramalina dilacerata *(Hoff.) Hoffm. - See colour image on inside back cover - Bernard de Vries*

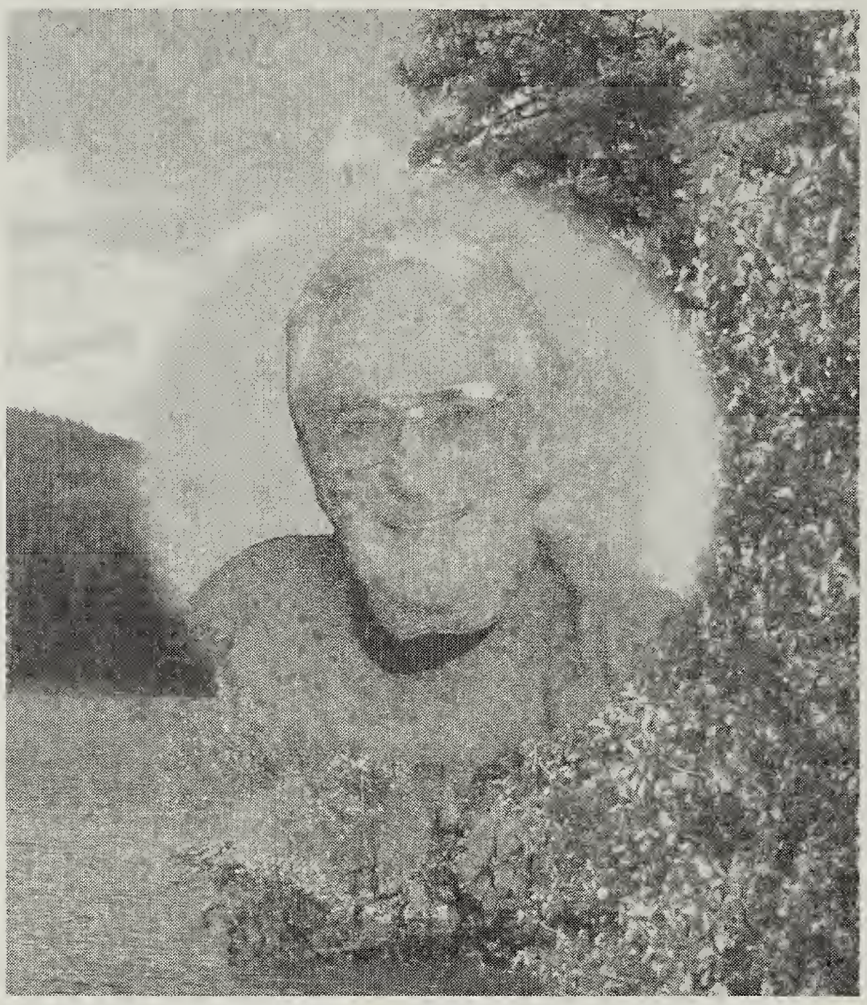
Common Names: Punctured ramalina, perforated ramalina, cartilage lichen.
Scientific Name: *Ramalina dilacerata* (Hoff.) Hoffm.
Synonyms: *Fistulariella dilacerata*, *F. minuscula*, *Ramalina minuscula*.
Description: This tufted greenish-yellow lichen is characterized by rather flat, smooth and hollow inflated branches with many perforations, a thin protective outer layer and loose fungal strands. The lichen lacks soredia (small powdery clumps of algal cells surrounded by fungal strands as means of vegetative reproduction). Flat apical or near apical or marginally pale yellow fruiting bodies (apothecia) with slight frosted discs are common.
Habitat: On bark and branches of various coniferous or deciduous trees, or tall shrubs and occasionally stumps in open and often lakeshore locations.
Growth form: Shrub-like.
Provincial Status: A common and widespread species in mixed boreal forest and scattered throughout the Aspen Parkland. Also occurring in the Cypress Upland.
Comments: Although the colour, habitat and substratum of this lichen are similar to *Usnea* (Beard lichens) or *Evernia mesomorpha* (Boreal oakmoss), it does not have the central cord as in *Usnea*, nor the physical structure of Boreal oakmoss.

Two other *Ramalina* species can be found in Saskatchewan: *Ramalina intermedia* (Rock ramalina) which has finely divided branches, with apical soredia but rarely with fruiting bodies and mainly a rock species, and *Ramalina obtusata* (Hooded ramalina) has broad, short branches with soredia on the inside of hood-shaped soralia and can be found on shrubs or trees throughout the province. Some cartilage lichens yield essential oils and minerals for use as a pleasant scent in perfumes.

The generic name *Ramalina* comes from the Latin ramalia=preferring twigs. Indeed the preferred substratum of this species are twigs. Of the *Ramalina* species, only *Ramalina dilacerata* is commonly found in our region.

IN MEMORIAM: BILL MATTHEWS, 1929 – 2012

C. STUART HOUSTON, *863 University Drive, Saskatoon, SK S7N 0J8*



Bill Matthews and his father Walter were close friends of Maurice G. Street at Nipawin. Entranced by Maurice's bird banding, Bill obtained his own banding permit in 1950; in his third year, 1952, he banded 2220 birds, 600 higher than Maurice ever obtained in a single year, and 101 species to Maurice's 106. Prior to 1960, Bill's lifetime total of 11,296 was third highest for Saskatchewan, exceeded only by Maurice Street and Fred Bard, in that sequence.[1] Assisted by his father and his sister Anne, ten years his junior, Bill's highest species banding totals were 3804 Common Redpolls, 2176 Slate-colored Juncos and 746 White-throated Sparrows, most caught with a simple pull-string drop trap set over weed seeds. Bill had unprecedented success in re-trapping Arctic-breeding Common Redpolls in subsequent winters: at one year, 15; at two years, seven in addition to one banded by Street; and at three years, one. Of the 13 Mallards he banded, individuals were shot in Manitoba, Arkansas and Georgia. The only Canvasback and the only Northern Pintail Bill banded were both shot, the former in South Dakota and the latter in Arkansas.

The most exciting find was when Mrs. J. A. Nevins heard an unmistakeable call of a Whip-poor-will from her farm home 7 miles east and 5 miles north of Nipawin. Being familiar with the call in eastern Manitoba, she notified the Matthews, father and son; the two came out to hear the call on 18 June 1956. The following evening, in company with Street, they flushed a Whip-poor-will from a jackpine ridge about 200 m from the Nevins farm

home. On June 27, Street returned with Roy Lanz and flushed the Whip-poor-will again; this time it had been incubating two eggs, easily visible from 50 m distance on a few dead leaves and pine needles. It was the first reported Whip-poor-will nest in Saskatchewan. The first egg hatched July 15. Matthews and Street returned for a final visit July 27 and found both young about 30 m from the nest. Each banded one young.[2]

From the 207 American Robins banded by Bill, four returned at one year, two at two years and three at three years. From four robins banded while in their nest, his sister Anne reports that one returned as an adult the next year to build its nest on a rafter in the Matthews tractor shed. Each time the tractor was returned to the shed, the vertical exhaust pipe was immediately below the nest, where the trusting adult female remained unflinching; sometimes parts of her band number could be read from the tractor seat. The bird returned to use this nest for six consecutive summers, as Anne remembers; if so, the latter three years were not reported to the banding office.

One fall day the Matthews family returned from fishing to find an unprecedented 57 robins in their large, walk-in 2.5 m^2 "house trap" with a funnel entrance and a door for the bander to walk through upright. The attraction was constantly dripping water. Once through the funnel, each robin was caught in the butterfly net in turn, banded and released, the "largest single catch" of Bill's banding career.

Bill was born 30 December 1929. The Matthews farm was 3 miles southeast of Nipawin, with planted trees of many kinds and spacious gardens bordering on open cultivated fields. In winter months Bill Matthews opened his banding traps at his town residence. Long after he left school, his voracious reading allowed him to write the GED exam and obtain a Grade 12 certificate. Bill continued to farm with his parents until 1963, the year he worked for the Provincial Museum of Natural History at the Francois Finley Fort. In the spring of 1964 he began work with the Department of Natural Resources at English Cabin Tower and then Beaver House Tower. In 1977 he was promoted to Resource Officer 1. He maintained parks and campsites, marked trees, observed from fire towers, and fought fires. His most scary adventure was hanging out over the front of a boat, seeing a pair of eyes on shore. His father steered the boat towards those eyes, the boat hit the bank, and Bill somersaulted on to the ground – at the feet of a startled wolverine.

In 1981, Bill married Lynn Updike, a widow, and moved to her home in the village of Love; he drove to work in Nipawin for his final six years with DNR. He served three terms of three years each as councillor and one year as mayor of the village of Love, 1996-97. His final two years were spent as a resident of Arborfield Special Care Lodge, where he died 13 November 2012.

Acknowledgments

I thank Anne Matthews Clemens, Bert Dalziel, Lynn Matthews, Frank Roy, and especially Jean Lidster for assistance.

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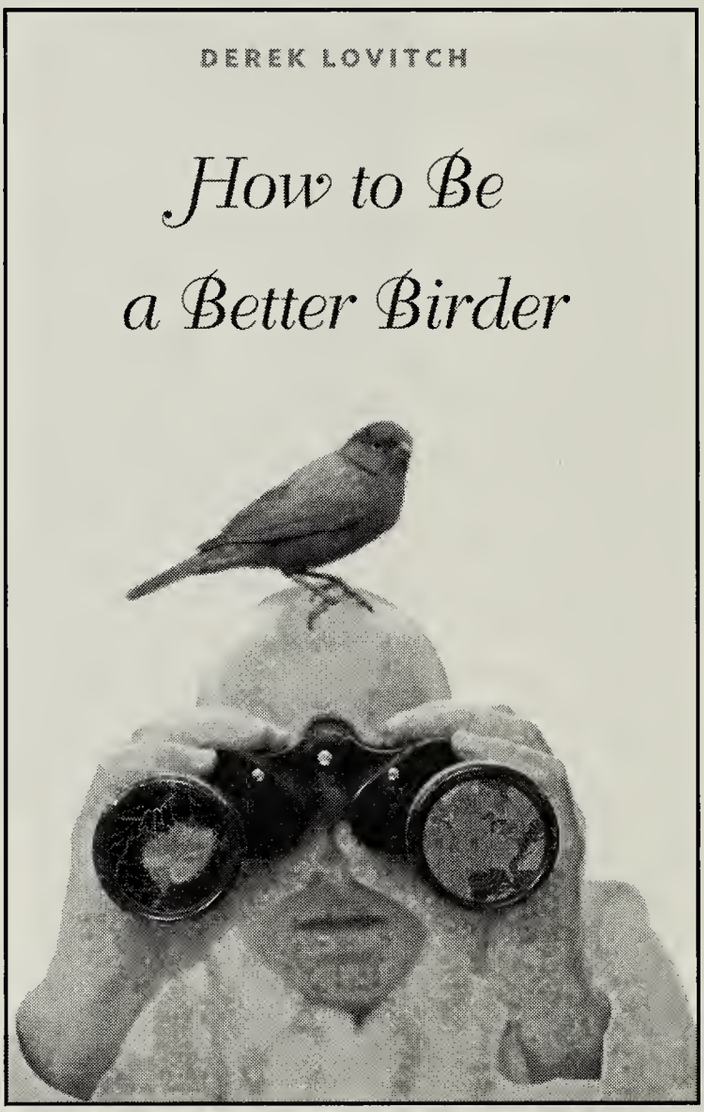
2. Street MG (1956) Saskatchewan's first nesting record of the Whip-poor-will. *Blue Jay* 14:87-88.

BOOK REVIEWS

HOW TO BE A BETTER BIRDER

DEREK LOVITCH. 2012. Princeton University Press, Princeton, NJ. Paper: $19.95 US. ISBN: 9780691144481. 208 pages. 15.2 by 22.9 cm. 53 colour illustrations. 10 maps.
Reviewed by ROB WARNOCK, e-mail: *warnockr@accesscomm.ca*.

This book examines eight complementary approaches to improve one's birding skills. They include the use of advanced bird identification, habitat geography, and weather, birding at night, birding with a purpose, vagrants and patch listing. The eighth chapter is an interesting case study from New Jersey where the author tested these eight tools by birding with experts across New Jersey in the fall of 2009. These tools do work!



I particularly like the first chapter where the author stresses the whole bird approach and the use of habitat and geography in bird identification and not totally rely on field marks that may not be always visible to the birder. The next three chapters on habitat, geography and weather are well done and provide practical ways how habitat, weather and geography information can increase birding success. I learned more about weather and how it can affect migration patterns and ultimately birding success. Birding at night is about the fascinating use of radar to track the nocturnal migration of birds and not just looking and listening for owls.

Birding with a purpose provides some opportunities for birders to contribute directly to ornithology and conservation through field studies, Birding Bird Surveys, breeding bird atlases and Christmas Bird Counts. The author recommends birders to contribute their sightings to eBird, an online database where researchers can study bird populations and distributions.

The author provides useful information about vagrants and where and when they are more likely to occur. Patch listing is a handy way to practice one's birding skills. A patch is a local and accessible birding location where a birder can easily and regularly practice birding and collect detailed information about birds. The author stresses the enjoyment and fun of birding and getting field practice in honing one's birding skills throughout the volume.

The text is easy to read with a storytelling approach and minimized use of technical jargon. Careful use of maps and excellent illustrations enhances the text throughout the book. Use of numerous examples from the author's extensive birding

experience in eastern North America and other locations strengthens the book. These birding tools are truly applicable to any region where birds exist.

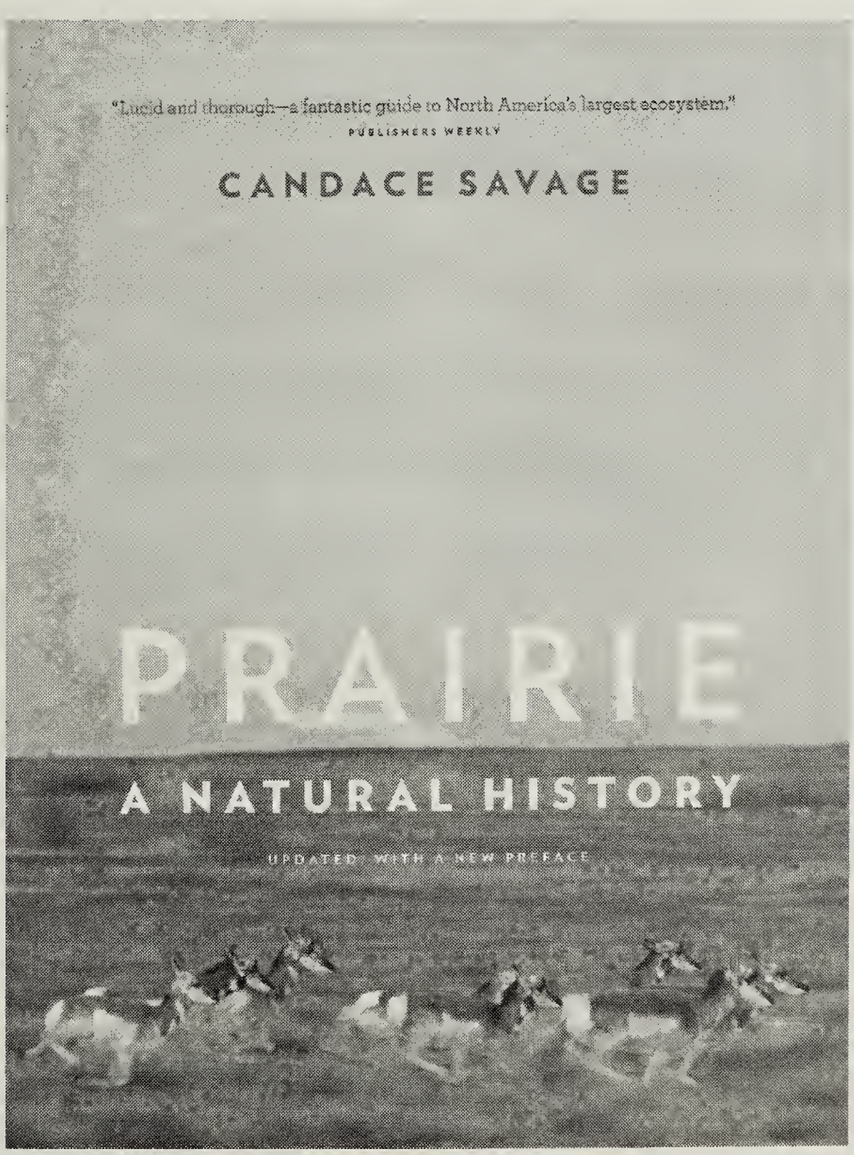
In addition to the handy table of contents and index, there are the text box lists of recommended sources of reputable additional information for each major topic so the reader can easily do further research on each topic discussed in the book. These resource lists are a key strength of this book. Instead of burying these text box lists in each chapter, it would have been better to place them in a separate chapter for them so the reader can find them more easily. He does warn that not all online resources are reputable or created equal and the birder must exercise caution and judgement while using online resources.

Although this book assumes the reader has some birding knowledge and experience, I recommend this excellent book to anyone looking to significantly improve their birding skills by expanding their birding 'toolbox'.

PRAIRIE: A NATURAL HISTORY. NEW EDITION

CANDACE SAVAGE. 2011. Greystone Books and the David Suzuki Foundation, Vancouver BC. 320 pages. 19 cm by 22.5 cm. ISBN: 978-1-55365-588-6. Softcover. $34.95 CDN.

Reviewed by ROB WARNOCK, E-mail: *warnockr@accesscomm.ca*



In the December 2004 issue of *Blue Jay*, I reviewed the first edition of Candace *Savage's Prairie: A Natural History*.[1] How does the 'new edition' compare to the spectacular first edition?

Aside from a new a book cover, page format, preface, some new information and modest changes in references, the two editions are surprisingly similar. The text in first eight chapters (Where is Here?, Digging into the Past, The Geography of Grass, Secrets of the Soil, Home on the Range, Water of Life, Prairie Woodlands and The Nature of Farming) are nearly identical in text between the two editions. The last chapter, The Long Range Forecast, had the most revisions adding new information about recent agricultural and land use trends, and species risk and conservation.

I would have liked it if the author had taken the opportunity to add a glossary and expand certain topics as natural forest islands, First Nations and their traditional knowledge of the Great Plains, prominent expeditions and naturalists and impacts of human demographic changes on the Great Plains in the new edition. These additions would have strengthened the new edition and help distinguish it from the first edition.

I found the layout of the first edition to be crisper and more logical than the new edition. The hardcover first edition will also last longer compared to the soft cover new edition.

The text in both editions is superb and the same excellent illustrations and photos are used in both editions. What I wrote in 2004 about the first edition generally applies to the new edition: "Seldom so writing craftsmanship and respect for scientific fact come together to make such a readable book. *Prairie* is a pleasure to read cover to cover, a chapter at a time or in small pieces by sampling the text boxes and illustrations. This book is truly a gift to all interested in the natural history of the prairies".[1] If you do not have a copy of the first edition, I do recommend the more affordable new edition of *Prairie: Natural History* for your natural history library.

1. Warnock R (2004) Book Review: Prairie: A Natural History by Candace Savage. Greystone Books, Vancouver, BC. *Blue Jay* 62: 223-224.

THE GREAT SASKATCHEWAN BUCKET LIST

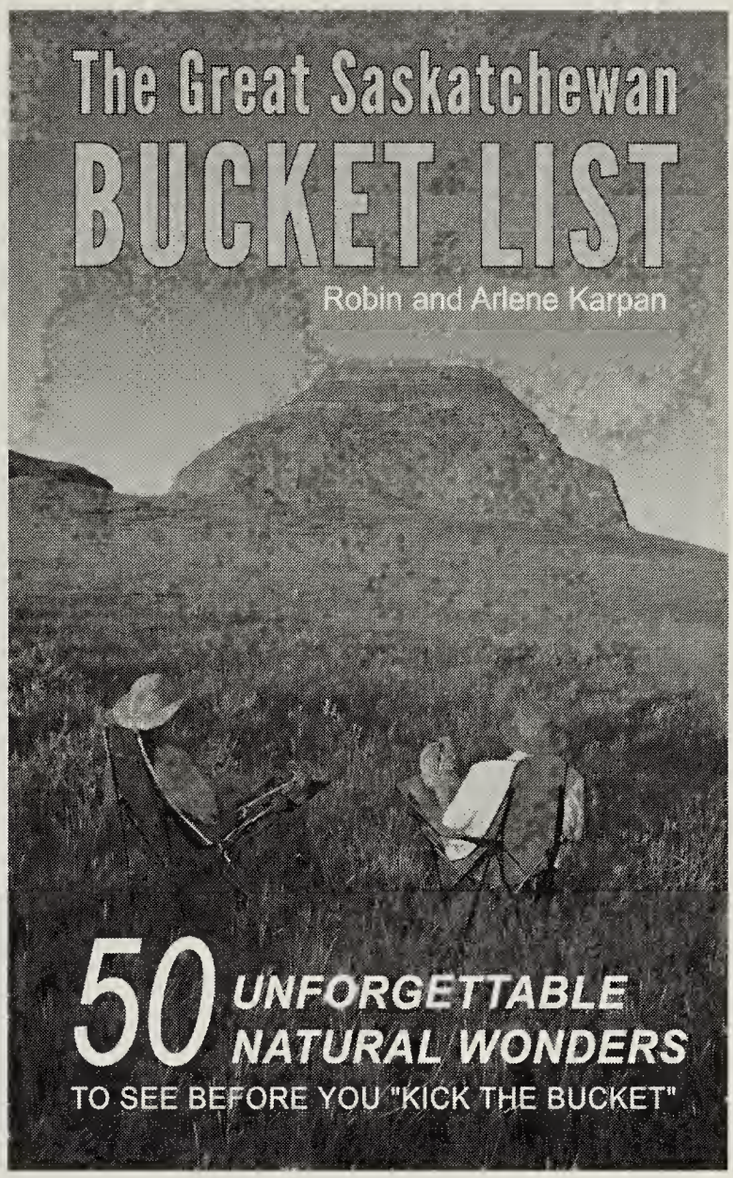
ROBIN AND ARLENE KARPAN. 2012. Parkland Publishing. Saskatoon, SK.
$19.95 CDN. Soft Cover. ISBN: 9-780980-941937. 176 pages. 173 colour photos.
15.2 cm by 22.9 cm.
Reviewed by ROB WARNOCK, E-mail: *warnockr@accesscomm.ca*

The Great Saskatchewan Bucket List is the latest book by well-known award-winning Saskatchewan nature and travel writers and photographers Robin and Arlene Karpan. This book is about the natural wonders of Saskatchewan and the Karpans have selected 50 of them for this fascinating bucket list for their 'wow factor' and public access. It must have been a challenge to limit the selection to only 50 as Saskatchewan has many places of natural beauty. Selected natural wonders range from the Conglomerate Cliffs in the Cypress Hills to the Athabasca Sand Dunes in the far north. The authors did a good job in achieving balanced geographical representation and a mix of difficulty ratings. However, a vast majority of the selected natural wonders are accessible to people of average abilities and the authors only selected only two natural wonders in the far north with

the maximum difficulty rating of five for the most adventurous and experienced wilderness campers. The easiest natural wonder to access is the ever changing and beautiful Saskatchewan sky.

First time readers of this book should read carefully the introductory chapter as it contains key information about how the 50 natural wonders were selected, and how to use this guide and its five difficulty ratings. The difficult ratings range from one (easy, minimal effort) to five (out and out difficult). After the introduction, the book is divided into 50 chapters for each natural wonder. These chapters contain spectacular colour photos of the natural wonder, information about the natural wonder, including location with coordinates and enlarged highway map inserts, how to get to each natural wonder, and resources for additional research including websites addresses of Saskatchewan Parks, Parks Canada and Tourism Saskatchewan.

Like *Saskatchewan's Best Hikes and Nature Walks*[1] (reviewed in the September 2011 issue of *Blue Jay*), this attractive volume is very well written and researched by the authors who visited each natural wonder discussed in the book. Of the natural wonders in this volume that I have personally visited in recent years, I found the information to be extremely accurate so I do have confidence that information throughout the book is accurate at the time of writing. Like previous guide books, the authors do place a key disclaimer at the beginning of book stating that trail/road conditions change over time due to weather and other factors and all readers should do their research and contact the authority responsible for the trail or road before traveling. The authors also recommend hiring reputable outfitters and guides for trips to the more remote and difficult locations in northern Saskatchewan.



As the Karpans say on their website "Whether you prefer an hour's stroll along an easy path or a week hiking in remote backcountry, there's never been a better time to take a hike." I agree. Therefore, I highly recommend this extremely useful and reader friendly guidebook to anyone interested in 50 natural wonders in Saskatchewan.

1. Karpan R, Karpan A. (2011) Saskatchewan's Best Hikes and Nature Walks. Parkland Publishing. Saskatoon, SK.

MYSTERY PHOTO

Blue Jay reader Phil Taylor caught this insect in action on July 28, 2012. He was enjoying the sounds, smells, and sights of the pine and spruce in Cypress Hills Interprovincial Park. This mystery photo has two components: what is this insect, and has anyone noticed it in the Cypress Hills before (ie. are they uncommon or common in this location)?

Please send your answers to the Blue Jay editors *bluejay@naturesask.ca*

Mae Elsinger correctly answered the March 2013 Mystery photo (see facing page), and is the winner of the prize from Nature Saskatchewan. She notes that,"livestock producers sometimes call it 'bull snot'".

ANSWER TO THE MARCH 2013 MYSTERY PHOTO:

JOHN SHEARD, Prof. Emeritus, University of Saskatchewan

The mystery photo is undoubtedly of a colony of the blue-green alga *Nostoc* (Cyanophyta) in its gelatinous, hydrated state. In its dehydrated state it is much less noticeable, smaller, a darker colour (almost black) and resembles cornflake cereal (except for the colour). It is often mistaken for the lichen *Collema* which also contains *Nostoc* but which is less gelatinous and more structured. *Collema* may also possess fruiting structures (apothecia) of the fungal partner which, of course, must always be absent from *Nostoc* colonies since it is not a lichen. *Collema* would be less easy to slip on when wet and retains its basic form when dehydrated. In the winter *Nostoc* is dehydrated and when snow plowed it will be fragmented and the fragments distributed, thereby helping to ensure its survival the following spring.

Blue-green algae are much more closely related to bacteria than to other algae but they do photosynthesize and functionally behave as algae. *Nostoc* species are filamentous, the filaments being surrounded by a gelatinous sheath and in the photo case it is the sheath that allows the filaments to stick together to form the colonies. In lakes, colonies become rounded due to wave action on the shore line, forming so-called '*Nostoc* balls', sometimes up to golf ball size. Many related genera are free floating and some contribute to noxious algal blooms that are toxic to livestock and detract from our recreational experience at the cottage, particularly in late summer and fall.

- Gord Hammell

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